

P.141. Act. 1.

$$35 \text{ g Ba(OH)}_2$$

$$M = 137,2 + (16+1) \times 2 = 171,2 \text{ g/mol}$$

$$a) 35 \text{ g Ba(OH)}_2 \cdot \frac{1 \text{ mol de Ba(OH)}_2}{171,2 \text{ g de Ba(OH)}_2} = 0,20 \text{ mol Ba(OH)}_2$$

$$b) 0,20 \text{ mol Ba(OH)}_2 \cdot \frac{6,022 \cdot 10^{23} \text{ moléculas de Ba(OH)}_2}{1 \text{ mol Ba(OH)}_2} \cdot \frac{2 \text{ átomos O}}{1 \text{ molécula Ba(OH)}_2} = 2,4 \cdot 10^{23} \text{ átomos O}$$

$$c) 0,20 \text{ mol Ba(OH)}_2 \cdot \frac{2 \text{ mol H}}{1 \text{ mol Ba(OH)}_2} = 0,40 \text{ mol H}$$

$$d) 0,20 \text{ mol Ba(OH)}_2 \cdot \frac{1 \text{ mol Ba}}{1 \text{ mol Ba(OH)}_2} = 0,20 \text{ mol Ba} \cdot \frac{137,2 \text{ g Ba}}{1 \text{ mol Ba}} = 27,5 \text{ g Ba}$$

$$e) \frac{171,2 \text{ g Ba(OH)}_2}{1 \text{ mol Ba(OH)}_2} \cdot \frac{1 \text{ mol}}{6,022 \cdot 10^{23} \text{ eq. molec.}} = 2,84 \cdot 10^{22} \text{ g/eq. molec.}$$

$$f) 5 \text{ g de O} \cdot \frac{1 \text{ mol O}}{16 \text{ g O}} \cdot \frac{1 \text{ mol Ba(OH)}_2}{2 \text{ mol O}} \cdot \frac{171,2 \text{ g Ba(OH)}_2}{1 \text{ mol Ba(OH)}_2} = 26,80 \text{ g Ba(OH)}_2$$

P.143 Act. 2

$$(\text{NH}_4)_2\text{SO}_4 \quad M = (14+4) \times 2 + 32 + 16 \times 4 = 132 \text{ g/mol}$$

$$\frac{32 \text{ g de S}}{132 \text{ g (NH}_4)_2\text{SO}_4} \cdot 100 = 24,24\%$$

$$\frac{2 \times 14 \text{ g de N}}{132 \text{ g (NH}_4)_2\text{SO}_4} \cdot 100 = 21,21\%$$

$$\frac{2 \times 1 \text{ g de H}}{132 \text{ g (NH}_4)_2\text{SO}_4} \cdot 100 = 6,06\%$$

$$\frac{4 \times 16 \text{ g O}}{132 \text{ g (NH}_4)_2\text{SO}_4} \cdot 100 = 48,48\%$$

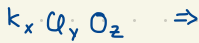
P 143 Act 3

$$MH_{CuSO_4 \cdot 5H_2O} = 249,61 \text{ g/mol}$$

$$MH_{H_2O} = 18 \text{ g/mol}$$

$$\%_{AGUA} = \frac{5 \cdot 18}{249,61} \cdot 100 = 36\%$$

P 143 Act 4



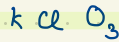
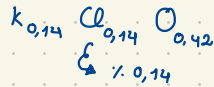
$$5,6 \text{ g K} + 5,1 \text{ g Cl} + x \text{ g O} = 17,5 \text{ g}$$

$$x = 6,8 \text{ g O}$$

$$5,6 \text{ g de K} \frac{1 \text{ mol K}}{39,1 \text{ g K}} = 0,14 \text{ mol K}$$

$$5,1 \text{ g de Cl} \frac{1 \text{ mol Cl}}{35,5 \text{ g Cl}} = 0,14 \text{ mol Cl}$$

$$6,8 \text{ g de O} \frac{1 \text{ mol O}}{16 \text{ g O}} = 0,42 \text{ mol O}$$



MASA MOLAR 78 g/mol

Fórmula empírica: $12 \text{ g} \frac{1 \text{ mol C}}{12 \text{ g de C}} = 1 \text{ mol C}$

CH

$$1 \text{ g} \frac{1 \text{ mol H}}{1 \text{ g de H}} = 1 \text{ mol H}$$

fórmula molecular = $n \cdot$ fórmula empírica $\frac{78}{13} = 6$

 C_6H_6 

$$M_{\text{C}_x\text{H}_y} = 200 \text{ g/mol}$$

$$3,14 \text{ g CO}_2 \frac{12 \text{ g C}}{44 \text{ g CO}_2} = 0,86 \text{ g C}$$

$$M_{\text{CO}_2} = 44 \text{ g/mol}$$

$$3,14 \text{ g CO}_2 \frac{1 \text{ mol CO}_2}{44 \text{ g CO}_2} \cdot \frac{1 \text{ mol C}}{1 \text{ mol CO}_2} = 0,071 \text{ mol C} \quad \text{todo el C viene de C}_x\text{H}_y$$

$$1 \text{ g muestra} - 0,86 \text{ g C} = 0,14 \text{ g de H} = 0,14 \text{ mol de H}$$

 $\text{C}_{0,071} \text{H}_{0,14}$

$$12x \cdot x + 1 \cdot 2 \cdot x = 200 \Rightarrow x = 14$$

F. empírica

 $\text{C}_1 \text{H}_2$ $\text{C}_{14} \text{H}_{28}$

F. molecular

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64% RIQUEZA

1,45 g/mL

250 mL } HNO_3
1,5M

PM = 63 g/mol

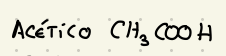
$$M = \frac{n}{V} \quad n = 1,5 \cdot 0,25 = 0,375 \text{ moles } \text{HNO}_3$$

$$0,375 \text{ moles } \text{HNO}_3 \cdot \frac{63 \text{ g } \text{HNO}_3}{1 \text{ mol } \text{HNO}_3} = 23,625 \text{ g } \text{HNO}_3$$

$$d = \frac{m}{V} \quad V = \frac{23,625}{1,45} = 16,3 \text{ mL } \text{HNO}_3$$

$$16,3 \text{ mL } \text{HNO}_3 \cdot \frac{100 \text{ g COMERCIAL}}{64 \text{ g Puros}} = 25,47 \text{ mL } \text{HNO}_3 \text{ COMERCIAL}$$

17



2M

1,03 g/mL

$$m = \frac{n_s}{\text{Kg disolvente}}$$

1 L $\Rightarrow$ 1000 mL

$$d = \frac{m}{V} \quad m = 1,03 \cdot 1000 = 1030 \text{ g disolución}$$

$$M = \frac{n}{V} \quad n = 2 \cdot 1 = 2 \text{ moles } \text{CH}_3\text{COOH}$$

$$2 \text{ moles } \text{CH}_3\text{COOH} \cdot \frac{64 \text{ g } \text{CH}_3\text{COOH}}{1 \text{ mol}} = 128 \text{ g } \text{CH}_3\text{COOH}$$

$$m_{\text{disolvente}} = m_{\text{disolución}} - m_{\text{solute}} = 1030 - 128 = 902 \text{ g disolvente}$$

$$m = \frac{2}{0,902} = 2,2 \text{ m}$$

$$902 \text{ g } \text{H}_2\text{O} \cdot \frac{1 \text{ mol } \text{H}_2\text{O}}{18 \text{ g}} = 50,1 \text{ mol } \text{H}_2\text{O}$$

$$n_T = 50,1 + 2 = 52,1$$

$$X_{\text{Ac}} = 0,04$$

$$\% \text{ASA} = \frac{128}{1030} \cdot 100 = 12,4\%$$

19) $\frac{V}{d}$ HCl ?
 Dis 0,5 M
 Dis 100 mL 0,2 M
 PREPARO ESO PARTIENDO DE HCl 0,5 M

$$M = \frac{n}{V} \Rightarrow n_{\text{HCl}} = M_2 V_2 = 0,02 \text{ mol HCl}$$

necesito para preparar 2
 los mols en las
 disoluciones no
 cambian.

$$M_1 = \frac{n}{V_1} \Rightarrow 0,5 = \frac{0,02}{V} \Rightarrow V = 0,04 \text{ L}$$

40 mL de la disolución
 inicial

20) 10 mL
 HNO_3
 64%
 1,45 g/mL

$$V_{\text{FINAL}} = 100 \text{ mL}$$

$d M_{\text{FINAL}} ?$ $\Rightarrow$ necesito saber los mols
 con los muros que en
 la inicial.

$$d = \frac{m}{V} \quad 1,45 = \frac{m}{10} \quad m = 14,5 \text{ g de disolución}$$

No es pura

$$14,5 \text{ g} \cdot \frac{64 \text{ g HNO}_3}{100 \text{ g muestra}} = 9,28 \text{ g HNO}_3$$

$$9,28 \text{ g HNO}_3 \cdot \frac{1 \text{ mol}}{61 \text{ g}} = 0,152 \text{ mol HNO}_3$$

$$M = \frac{0,152}{0,1} = 1,52 \text{ M}$$